

1 WE CLAIM:

SUB A1

1 1. An improved index for data that represent geographic features, wherein
2 said index has a structure that includes two spatial dimensions whereby said data indexed
3 by said structure are searchable spatially using said two spatial dimensions, the
4 improvement comprising:

5 an additional dimension included in said structure of said index, whereby a
6 property of the geographic features represented by the data is searchable using said
7 additional dimension.

1 2. An improved index for data that represent geographic features, wherein
2 said index has a structure that includes two spatial dimensions whereby said data indexed
3 by said structure are searchable spatially using said two spatial dimensions, the
4 improvement comprising:

5 an additional dimension included in said structure of said index, whereby a
6 property of the data that represent the geographic features is searchable using said
7 additional dimension.

1 3. The invention of Claim 1 or 2 wherein said structure is a *k*-d-tree index
2 structure comprising a root node, intermediate nodes and leaf nodes, wherein each node
3 is part of a parent-child relationship wherein each parent node includes control
4 information from which one of at least two child nodes associated with the parent node
5 are distinguishable based on a search key.

1 4. The invention of Claim 1 or 2 wherein said improved index is
2 homogeneous.

1 5. The invention of Claim 1 or 2 wherein said improved index is
2 non-homogeneous.

1 6. The invention of Claim 1 or 2 wherein said geographic features are roads.

1 7. The invention of Claim 1 wherein said property is a rank of the geographic
2 features represented by the indexed data.
3

1 8. The invention of Claim 7 wherein said rank includes both integers and
2 fractional values.
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1 9. The invention of Claim 2 wherein said property is a granularity of the
2 indexed data.
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1 10. The invention of Claim 2 wherein said property is a viewing altitude
2 associated with the indexed data.
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1 11. The invention of Claim 2 wherein said property is a scale associated with
2 the indexed data.
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1 12. The invention of Claim 2 wherein said property is an expiration date
2 associated with the indexed data.
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1 13. The invention of Claim 2 wherein said property is a creation date
2 associated with the indexed data.
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ADD A2